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# ANNUAL REPORT

OF

THE ACTING DIRECTOR

OF THE

MUSEUM OF COMPARATIVE ZOOLOGY

AT HARVARD COLLEGE

TO THE

PROVOST OF HARVARD UNIVERSITY

FOR

1945 - 1946

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1946

PUBLICATIONS  
OF THE  
MUSEUM OF COMPARATIVE ZOÖLOGY  
AT HARVARD COLLEGE

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The BULLETIN and MEMOIRS are devoted to the publication of investigations by the Staff of the Museum or of reports by specialists upon the Museum collections or explorations.

Of the BULLETIN, Vols. 1 through 97 have appeared and of the MEMOIRS, Vols. 1 to 55.

These publications are issued in numbers at irregular intervals. Each number of the Bulletin and of the Memoirs is sold separately. A price list of the publications of the Museum will be sent upon application to the Director of the Museum of Comparative Zoölogy, Cambridge 38, Massachusetts.



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# MUSEUM OF COMPARATIVE ZOÖLOGY

## Faculty, 1946-1947

JAMES BRYANT CONANT, *President*

GEORGE RUSSELL AGASSIZ

HENRY BRYANT BIGELOW

GEORGE CHEEVER SHATTUCK

ALFRED SHERWOOD ROMER

## Staff, 1946-1947

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HUBERT LYMAN CLARK . . . .	<i>Curator of Marine Invertebrates Emeritus</i>
ROBERT TRACY JACKSON . . . .	<i>Curator of Fossil Echinoderms Emeritus</i>
PERCY EDWARD RAYMOND . . . .	<i>Curator of Invertebrate Palaeontology Emeritus</i>
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ELISABETH DEICHMANN . . . .	<i>Curator of Marine Invertebrates</i>
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JAMES LEE PETERS . . . . .	<i>Curator of Birds</i>
HAROLD JEFFERSON COOLIDGE, JR.	<i>Associate Curator of Mammals (on leave)</i>
JAMES COWAN GREENWAY, JR. . .	<i>Associate Curator of Birds</i>
WILLIAM GEORGE FOWLE HARRIS	<i>Associate Curator of Oölogy</i>
COLUMBUS O'DONNELL ISELIN, II	<i>Associate Curator of Oceanography (on leave)</i>

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BARBARA LAWRENCE SCHEVILL . . . . .	<i>Associate and Acting Curator of Mammals</i>
WILLIAM EDWARD SCHEVILL . . . . .	<i>Associate Curator of Invertebrate Palaeontology</i>
WILLIAM CHARLES SCHROEDER . . . . .	<i>Associate Curator of Fishes</i>
HENRY CROSBY STETSON . . . . .	<i>Associate Curator of Oceanography</i>
ELIZABETH BANGS BRYANT . . . . .	<i>Assistant Curator of Insects</i>
RICHARD WINSLOW FOSTER . . . . .	<i>Assistant Curator of Mollusks</i>
CHARLES PIERSON LYMAN . . . . .	<i>Assistant Curator of Mammals</i>
THEODORE ELMER WHITE . . . . .	<i>Assistant Curator of Vertebrate Palaeontology</i>
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ARTHUR CLEVELAND BENT . . . . .	<i>Research Fellow in Ornithology</i>
TILLY EDINGER . . . . .	<i>Research Fellow in Palaeontology</i>
VLADIMIR NABOKOV . . . . .	<i>Research Fellow in Entomology</i>
WILLIAM CAMERON FORBES . . . . .	<i>Associate to Collect Specimens of Natural History</i>
THOMAS TONKIN McCABE . . . . .	<i>Associate in Ornithology</i>
HENRY SETON . . . . .	<i>Associate in Vertebrate Palaeontology</i>
MARGARET ADA FRAZIER . . . . .	<i>Librarian</i>
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MYVANWY MILLAR DICK . . . . .	<i>Research Assistant</i>
MARJORIE HAWORTH PATTEE . . . . .	<i>Research Assistant</i>
BENJAMIN SHREVE . . . . .	<i>Research Assistant</i>
RUTH TURNER . . . . .	<i>Research Assistant</i>
NELDA EMELYN WRIGHT . . . . .	<i>Research Assistant</i>
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RUTH BYINGTON INMAN . . . . .	<i>Secretary to the Bird Department</i>
DOROTHEA SLATER . . . . .	<i>Secretary to the Mollusk Department</i>
DOROTHY MARIE SLATER . . . . .	<i>Staff Secretary</i>
JANE BAYMORE JORDAN . . . . .	<i>Assistant in the Mammal Department</i>
JESSIE BELL MacKENZIE . . . . .	<i>Assistant Librarian</i>
MARIE STAPLETON CLAUDE . . . . .	<i>Assistant in the Library</i>
GLORIA CAMPBELL MARENGO . . . . .	<i>Assistant in the Library</i>
REGINALD ALDWORTH DALY . . . . .	<i>Sturgis Hooper Professor of Geology Emeritus</i>
LOUIS CARYL GRATON . . . . .	<i>Sturgis Hooper Professor of Geology</i>



## REPORT OF THE ACTING DIRECTOR

1945-1946

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TO THE PROVOST OF HARVARD UNIVERSITY:

*Sir:*

It is my painful duty to record the death on January 8, 1946 of Dr. Thomas Barbour, Director of the Museum since 1927. Accounts of his scientific achievements, of the scope of his activities, and of the many honors that came to him, are contained in the several obituaries that appeared shortly after his death. And an appreciation of his labors for Harvard, as well as of his unique and charming personality, was presented to the Faculty of Arts and Sciences on March 19, 1946, by a committee of his colleagues. All that is appropriate here is for me to summarize the more outstanding of his contributions to the daily welfare of the Museum, to its scientific output, and to its enduring reputation.

Thomas Barbour's association with the Museum spanned his mature life, for he began studying its herpetological collections soon after he came to college as a freshman in 1902, working as an unofficial assistant under the tutelage of the late Dr. Samuel Garman. He received his A.B. degree in 1906; then with his bride, Miss Rosamond Pierce, he took an extended honeymoon through India, Burma, the Malay Peninsula, the Dutch East Indies, China, and Japan, gathering extensive collections that later formed the basis for his "Zoögeography of the East Indian Islands." Immediately after receiving his doctorate in 1910, he was appointed Associate Curator of Reptiles and Amphibians in the Museum, and Curator in 1925. In 1927, following the resignation of Mr. Samuel Henshaw, he was appointed Director, being fourth in line from Louis Agassiz, and also Director of the University Museum as a whole.

Tom Barbour, as he was known to all of us, entered upon his task not only with unbounded devotion, but already with definite ideas both of the services the Museum ought to render to the

University and as to the lines of development that might best serve these ends. The tasks that most immediately faced him were two-fold. First was the modernization of the building, which involved the installation of electric lights, a passenger elevator, and hot water system, as well as other alterations too numerous to mention here. A second task, hardly less urgent, was the general rearrangement and renovation of the exhibits, not only to render these more attractive to the public, but especially to make them more useful to the teaching staff of the Department of Biology. The changes, a detailed account of which will be found in his report for the year 1927-28, also freed seven galleries, which, remodelled, have since served as offices for Curators, and as storage rooms, much needed to accommodate the rapidly increasing collections. And so well thought out was the new plan that there has been no need for any major changes in the exhibits since that time, though minor additions and improvements have been made from time to time, under his guidance, as opportunity offered. Notable among these have been the replacement of the old Greene Smith collection of North American birds by the beautifully mounted Thayer collection, and the installation of numerous mounts of vertebrate fossils prepared with consummate skill by Mr. George Nelson.

As Mr. Loveridge has written in a minute to the Linnaean Society of London, "The enthusiasm of T.B., as he was generally called, injected new life into the institution, and there followed a decade of expansion and great activity of the Museum Staff, with the Director guiding and energizing, but always according the greatest liberty of action to his colleagues." Under his stewardship the collections were expanded almost beyond belief, his interest in this regard being truly catholic, for it embraced every department. The members of the scientific staff working actively in the Museum doubled in number, as reflected in Corporation appointments; the Bulletins and Memoirs of the Museum were held to the highest standard; and the scientific value of the many other publications by its Staff continued to receive international recognition among their colleagues. Meantime, Dr. Barbour was constantly fostering coöperation with sister institu-

tions, or working actively for their welfare, among them the Atkins Institution of the Arnold Arboretum, the Barro Colorado Laboratory (latterly the Canal Zone Biological Area), the Woods Hole Oceanographic Institution and the Antivenin Institute at Sao Paulo, Brazil, to mention only a few. It was during the first year, too, of his directorate that arrangements were made for Curators in the Museum to offer instruction in Harvard College, with professorial rank in the Faculty of Arts and Sciences, to graduate students in the beginning, but then to under-graduate students later on. And he himself was among the first to be appointed in 1944 to one of the Alexander Agassiz Professorships, chairs named in the memory of Alexander Agassiz, second Director of the Museum.

The Museum has always been a deficit institution; Thomas Barbour contributed constantly and freely towards its expenses from his private purse, so freely indeed that it is doubtful whether even his closest associates realized the magnitude of his gifts. It was not by his gifts, however, that he lead the Museum as a living center for science through the years, but by his constant enthusiasm, coupled with shrewd insight as to its needs, and by the extraordinary breadth of his zoölogical knowledge and interests. I think he would have wished no memorial better than a knowledge that by his encouragement and counsel he had had a hand in every one of the contributions to scientific knowledge put forth during his term of office by the Staff of the Museum; and that these contributions, under his leadership, were out of all proportion to the Museum's own meagre resources.

### STAFF

Since the termination of the war the Museum has welcomed the return of: Dr. P. J. Darlington, Jr., from the Army in malarial control work in Australia, New Guinea, the Philippines, and Japan; Mr. Richard W. Foster who had been employed in the Underwater Sound Laboratory of the University on naval researches; Mr. James C. Greenway, Jr., from the Navy after active service in air combat intelligence in the Southwest Pacific;

Mr. F. Russell Olsen from service in the Army Medical Corps; Mr. William E. Schevill from work at the Woods Hole Oceanographic Institution for the Navy, that is still of a confidential nature; Mr. Henry C. Stetson who during the war had general charge of the work that was done at the Woods Hole Oceanographic Institution to provide information on the character of the sea bottom in various parts of the world, requested by the Navy; and Dr. T. E. White from the Army in North Africa and Italy in photo intelligence for the Combat Engineers; also Mr. R. Tucker Abbott from the Navy where he served first as Air Pilot and then in the Medical Corps in Guam, the Philippines, and China, engaged in investigations on the mollusks that are responsible for the spread of Schistosomiasis. He is now working in the Department of Mollusks as a volunteer while completing his undergraduate studies.

Mr. C. O. Iselin, 2nd, is still on leave of absence, being fully employed with the reconversion of the activities of the Woods Hole Oceanographic Institution from a war to a peace basis; also Mr. Harold J. Coolidge, Jr., who served in the Army in the Office of Strategic Services; and Mr. Henry Seton continued to be engaged in post-war activities.

The following titles have been changed: Mr. C. O. Iselin, 2nd and Mr. Henry C. Stetson, each to Associate Curator of Oceanography; Mr. R. W. Foster to Assistant Curator of Mollusks.

The following additions have been made to the Museum's scientific staff:

Dr. Preston E. Cloud, Jr., Curator of Invertebrate Palaeontology and Assistant Professor of Palaeontology in the Faculty of Arts and Sciences, succeeding Dr. P. E. Raymond. Dr. Cloud took his doctorate at Yale where he worked for a time as Assistant to the late Professor Schuchert. He comes to the Museum from the United States Geological Survey. His chief publications have been on fossil brachiopods.

Dr. Charles P. Lyman, Assistant Curator of Mammals. Dr. Lyman's Ph.D. thesis on the control of coat color in the varying hare was published in the Museum's Bulletin in 1943. He came to the Museum shortly after his release from the Army where his



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most recent service was as Aviation Physiologist for the Central Pacific Ocean areas.

Miss Ruth Turner, Research Assistant in the Department of Mollusks. Miss Turner comes to the Museum from the William F. Clapp Laboratories at Duxbury, Mass. Her chief interests are in the boring mollusks and in certain historical aspects of Malacology. Besides her research ability, she is also an able pen artist.

On the other hand, Dr. Fenner A. Chace, Jr., having been released from the Army, has tendered his resignation from the Museum to accept a Curatorship in charge of Marine Invertebrates at the U. S. National Museum; Mrs. Lillian C. Smith, Research Assistant in the Department of Mollusks, has resigned because of ill health; and Miss Joanna M. Hale, Secretary to the Museum Staff, also resigned, following Dr. Barbour's death, to accept a position in Dean Leighton's office.

Dr. H. L. Clark, the senior member of the curatorial staff, and Dr. Percy E. Raymond have retired from their active Curatorships because of age. Both of these gentlemen, however, have assured me that they have no intention of giving up their scientific activities, and both of them have been most cordially invited to continue making full use of the Museum's collections and other facilities.

Mr. George Nelson, Preparator-in-Chief, who was invited to join the staff of the Museum by Alexander Agassiz in 1902, has also retired for the same reason. Mr. Nelson's skill in taxidermy, exemplified in his mounts of recent mammals, birds, and reptiles, as well as fossil vertebrates of various kinds, has brought distinction to the Museum's exhibits. He has also contributed many important additions through the years to the collections of various groups of animals from the southern United States. And we have every expectation that his interest in the Museum will continue unabated.

The following persons, not members of the staff, have been employed either on a full or on a part-time basis, or have received grants for work on the collections in the Departments named: Mrs. R. W. Jordan and Mrs. J. T. Lape, Mammals; Miss Ruth

B. Inman and Mr. Prentiss Shepherd, Jr., Birds; Mrs. Louise Kimball, Fishes; Miss Phyllis J. Smith, Insects; Prof. A. M. Chickering and Mr. B. J. Kaston, Spiders and their allies; Miss Dorothea Slater, Mollusks.

### ACKNOWLEDGMENTS

Mr. G. R. Agassiz has continued his generous donations, towards publication, work in the Library, and other special needs of the Museum, and Mr. Richard W. Foster to the general activities of the Department of Mollusks.

The hearty thanks of the Museum are also due to the following friends, all of whom have worked actively in one or other of the departments as volunteers without financial reward, whether from the Museum or from any other department of the University:

Reptiles: Master Kenneth Korb; Insects, Spiders and other Arachnids: Mr. K. A. Christiansen, Mr. George E. Erikson, Miss Sarah Jones, and Mrs. Dorothy Prendeville; Mollusks: Mr. R. Tucker Abbott, Mr. Carl Bruce, Dr. Merrill Champion, Mr. Allen C. Crocker, Mr. Richard I. Johnson, Miss Elizabeth C. Nelson, and Mr. Richard White; Fishes: Mrs. Myvanwy Millar Dick; and especially to Mr. James C. Greenway, Jr., Mr. Richard W. Foster, and Mr. Benjamin Shreve, who have devoted their full time wholeheartedly to the service of the Museum respectively as Associate Curator of Birds, as Assistant Curator of Mollusks, and as Research Assistant in the Department of Reptiles and Amphibians.

It may not be amiss here to recall the fact that some of the most significant contributions to science that have come from the Museum in the past have been at the hands of volunteer workers.

### RESEARCH ACTIVITIES

The functions of the Museum are two-fold—first, to encourage investigation (in which every one of our scientific staff is actively engaged), and second, to gather and maintain the collections of

different groups of animals that serve as source material for studies, whether by our own staff or by other investigators. Of these two fields, research is the primary one, collection the secondary, although sometimes the more spectacular.

The investigations that have been in progress by our curators and their associates during the past year may be grouped for convenience's sake under different departments according to which the activities of the Museum are loosely organized.

*Mammals:* Mrs. Schevill has continued active work on the identification of collections, a share of which the Museum will eventually receive. These come from areas poorly represented in our series, and from which material is needed for clarification of certain problems of mammalian relationships and distribution. The possession by the Museum of an excellent collection of mammal skeletons has also enabled her to do much interesting work developing mammal material for various archaeologists. Dr. Lyman is at present studying the phenomenon of hibernation, using hamsters (*Mesocricetus auratus*) as experimental animals, carrying out his experimental work in the Department of Anatomy of the Harvard Medical School, where he has also a half-time appointment as a Research Fellow.

*Birds:* Mr. Peters has been engaged chiefly on the preparation of Vol. VI of the Check-List of Birds of the World, Vol. V of which appeared in August 1945.

Mr. Griscom, in the time he could spare from his administrative and editorial duties, has completed his work on the families assigned to him in the proposed Part I of the forthcoming Distributional Check-List of Mexican Birds, besides revising other sections prepared by Dr. Friedmann of the U. S. National Museum. He also finished the extraction from the late Mr. William Brewster's journals and diaries of much unpublished material dealing with New England birds. This includes fifty years of records at Concord, Massachusetts, and early visits to Cape Cod and Nantucket. Notable population shifts and changes have taken place in these areas, validated by the records of numerous observers during the past twenty years. All these have been assembled for Concord and Nantucket. The introduction and

preliminary list of birds of the latter locality have been written, and the records for Outer Cape Cod tabulated through 1939. Reports by him on these three subjects are in preparation. He has also commenced a paper on Population Studies of Shore Birds.

Mr. Greenway, since his return from the Navy, has been engaged in the preparation of an extensive paper on Extinct and Vanishing Birds as well as on the revision of certain groups of Asiatic birds.

*Reptiles and Amphibians:* Much of Mr. Loveridge's time was spent in reading galley proof of his 500 page Revision of the African Geckos, written in 1943. He has also commenced work on a report on the very extensive herpetological collections received from men serving with the armed forces in New Guinea and other Pacific Islands. Mr. Shreve, besides identifying all incoming New World material, is at present engaged in the preparation of a report on the collections from Venezuela that the Museum has received from Dr. H. G. Kugler over a period of years. He also kindly helped with the exacting proof reading of the "First Supplement to Typical Reptiles and Amphibians," published in the Bulletin last February, which listed thirty types described by him, forty-nine by Dr. Barbour, and ninety-eight by Mr. Loveridge, during the period 1928-1942.

*Fishes:* Dr. Bigelow and Mr. Schroeder have spent whatever time they could spare, the one from his duties as Acting Director, the other from the routine tasks that fall upon him as Associate Curator, on their Monograph of Skates and Rays of the Western North Atlantic. This is now about one-half completed, and Mr. Eugene N. Fischer has been employed throughout the year preparing pen-and-ink drawings for it. The sections on the Lancelets, Cyclostomes and Sharks, which were mentioned in Dr. Barbour's report for 1944-45, are still in press, there having been many unexpected delays, but publication is hoped for by the end of 1946. In this connection, the thanks of the Museum are due to the U. S. National Museum and to Dr. Leonard P. Schultz, its Curator of Fishes, for the loans of large numbers of Elasmobranchs, as well as for many other courtesies; also to the Ameri-

can Museum of Natural History for similar loans; to Mr. W. I. Follett, who sent interesting lots of shark's teeth from California; and to Dr. Ethelwynn Trewavas, through whose kind offices the British Museum has loaned us three specimens of much wanted skates, material all of which has been indispensable to the preparation of the illustrations.

*Vertebrate Palaeontology:* Dr. Romer has completed his Review of the Labyrinthodont Amphibia which is now in press for our Bulletin. He is now making a statistical study of the evolution of the horse.

Dr. White, besides rearranging and checking the collection of fossil mammals, is preparing a supplementary report on the Miocene Mammals of Florida.

Miss Wright continues work on the Bibliography of Fossil Vertebrates, and Dr. Edinger, having completed her study of the evolution of the brain of the Equidae, is dividing her time between assisting Miss Wright on the Bibliography, and in studying the evolution and fate of the pineal eye.

*Insects, Spiders, and their Allies:* Many of Dr. Bequaert's efforts were necessarily devoted to the routine duties of the very extensive department of which he now has charge, as well as to the critical study of the great number of specimens that have been submitted by outsiders. He has, however, found time to continue his investigation of ticks and of wasps and has nearly completed synopses of the North American representatives of one family of stinging flies (*Hippoboscidae*) and of the Colombian representatives of another (*Tabanidae*), the latter in coöperation with Dr. Santiago Renjifo S. That he should also have prepared and submitted for publication an extensive study of land snails of the family Strophocheilidae (p. 13), bears additional witness to his untiring energy.

Dr. Darlington is again busily employed in taxonomic studies of carabid beetles of the Indo-Australian Archipelago, has also resumed his studies in the general field of zoögeography, and has completed chapters on the distribution of fresh-water fishes and of amphibians for a forthcoming book.

Mr. Nabokov's studies of genera of Lycaenid butterflies have

resulted in the publication of two papers listed below (p. 34). He has also published descriptions of some new species of butterflies, besides continuing his investigations of the Lycaenids in general.

Mr. Banks, since his retirement, has continued to work frequently in the Museum, continuing his lifelong interest in the Acarina or mites, Neuroptera, and Psammocharidae or spider-wasps. Several of his recent studies now await publication.

Miss Bryant has nearly completed her studies of spiders from the West Indies that are contained in our collections, besides naming a considerable amount of material garnered by Mr. Geroge Nelson in Florida and Alabama.

*Fossil Insects:* Professor Carpenter has resumed his studies of Permian insects that were interrupted during the war years and has completed a paper, now in press, on the Fossil Insects collected in Oklahoma in 1940. He has also continued his examination of the complex series of primitive forms (*Protorthoptera*) related to the modern grasshoppers from the Lower Permian of Kansas, and has found it necessary in his work on fossil forms to explore certain aspects of modern insects including a study of the wing articulation of primitive groups. The Bibliography of Fossil Insects which has been given no attention since 1914 has been brought up to date by Miss Ruth Dunn.

*Mollusks:* Mr. Clench not only continues his studies on the marine mollusks of the western Atlantic, which appear as generic monographs in *Johnsonia*, but is also making good progress with his researches on the land mollusks of the western Pacific Islands, the results of which are being published by the Bishop Museum of Honolulu.

Dr. Bequaert has nearly completed a Monograph of an important family of land snails of South America (*Strophocheilidae*), for our Bulletin, based not only on the Museum's own collection, but also on all the material of the group in the U. S. National Museum, in the Philadelphia Academy of Sciences, in the American Museum of Natural History, and in the Chicago Museum of Natural History.

Mr. Foster, besides studying the marine bivalves of the western

Atlantic in general, is bringing together all information available as to the poisons produced by the Cephalopods (squids and octopuses), for publication in the Occasional Papers on Mollusks.

Dr. Champion is now engaged on an historical account of the writings on mollusks of Edward S. Morse.

Miss Turner continues her studies of the destructive wood boring mollusks (Teredinidae), a report on one group of which (*Bankia*) has been published in *Johnsonia*. She is also engaged in the historical aspects of the mollusca, and has published an account of J. G. Anthony, the first Curator of Mollusks in the Museum.

Mr. Richard I. Johnson is carrying on his research on the freshwater clams of the eastern States.

Finally, Mr. Abbott, while on service in the Medical Corps, U. S. Navy, in Guam, the Philippines, and China, made studies in the field of the snails that carry the Flukes of the genera *Schistosoma*, *Fasciolepis*, and *Clonorchis*, and that are thus responsible for the dissemination of serious diseases. He obtained new ecological and anatomical data for several species and prepared a paper that has been accepted for publication in the Bulletin.

*Modern Invertebrates Other Than Mollusks:* Dr. Clark has divided his time between a monograph of an extensive and perplexing family (Amphiuridae) of small Brittle Stars, and on the manuscript and printers' proof of his report on the Echinoderm fauna of Australia which is in process of publication by the Carnegie Institution of Washington.

Dr. Diechmann's report on South African Holothurians nears completion. She continued work on other Holothurian reports, and has finished the drawings and commenced the manuscript for a paper on the Black Corals (Antipatharians) collected in Cuban waters on a recent cruise of the research ship *Atlantis* of the Woods Hole Oceanographic Institution. And it may not be amiss, if somewhat belated, to record that the last two volumes of her Translation from the Danish of Winge's Mammalian Genera, published in Copenhagen during 1941 and 1942, finally reached the Museum in October 1945.

*Invertebrate Palaeontology:* Dr. Raymond, like Mr. Banks, continued to work actively and productively in the Museum notwithstanding his retirement, continuing his studies of Carboniferous Crustacea, while Mr. Schevill has resumed his work on fossil cephalopods of the Jurassic and Tertiary strata of Cuba.

*Oceanography:* In September, Dr. Bigelow, with the coöperation of Dr. T. A. Edmondson of the Woods Hole Oceanographic Institution, completed a book on wind waves at sea, breakers, and surf, written at the request of the Hydrographic Office, U. S. Navy, primarily for Naval and other marine officers. All included computations and formulae were checked, and synoptic charts of frequency distribution of different height-classes of waves in different oceans were prepared by the Hydrographic Office during the winter. The complete manuscript, with illustrations, is now ready for publication, probably by that office.

Mr. Stetson's time has been divided between finishing up some investigations for the Navy at the Woods Hole Oceanographic Institution and resuming his investigations of marine sediments, which were dropped at the start of the war.

A paper on a new type of coring tube was completed with M. Juul Hvorslev of the Graduate School of Engineering and is now in press. Another report based on three summers' field work previous to the war on the sediments of the east coast continental slope is underway. Plans have been completed and a considerable sum granted by the Geological Society of America and Woods Hole Oceanographic Institution to Stetson together with Parker D. Trask and Fred B. Phleger, Jr., for an expedition to the Gulf of Mexico which will sail in February. Mr. Stetson informs me that special attention is to be paid to sedimentary conditions, although a large number of complete hydrographic and plankton stations are to be occupied. Besides furnishing information on a little known area, it is hoped that a study of recent sedimentary environments may throw some light on the rather complex problems connected with source and reservoir beds which confront the petroleum industry.



## COLLECTIONS

*General:* The routine care of the collections continues to absorb a very considerable part of the time of the curators who have them in charge. This work, while not spectacular, is of the utmost importance, because the value of the collections to science at large depends so largely upon their accessibility, and upon the completeness with which they are catalogued.

The following items might be mentioned in this regard: The collection of bats has been moved into the new cases mentioned on page 25; the cataloguing has been brought up to date, and the skull cleaning almost so.

About 150,000 specimens of birds have now been entered in the card catalogue which also serves as a guide to ornithological literature and nomenclature; this is something more than one-half of our collection of birds.

In connection with the moving of the turtles into the room newly fitted for them, it is of interest that the space now occupied by the reptiles and amphibians is about four times as great as it was when Mr. Loveridge first took charge of this department.

In the Fish Department, Mrs. Myvanwy Dick has continued to give able assistance in cataloguing and in labelling specimens. Two hundred and six families of fishes, 1,398 genera and 5,625 species, or nearly one-half of the collection, have now been entered in the card catalogue, while the type specimens, 1,465 in number, have been segregated in a special case. The records show that we have one of the largest and most widely representative collections of fishes in the world. In working over the collection Mrs. Dick has been able to free a large number of containers for future use, a matter of considerable importance because satisfactory glass jars may not be obtainable for some time to come. Also, Mrs. Louise Kimball has assumed the onerous duty of adding alcohol to the collections as needed, likewise of cleaning up the glassware. And Mr. Schroeder reports that, thanks to her work, "many a dusty and semi-opaque old jar that has reposed in the trays for some decades has now regained its pristine brilliance."

The Department of Vertebrate Fossils now enjoys the services of an additional Preparator, Mr. Stanley Olsen, whose stipend is provided by the Department of Biology.

Dr. Bequaert reports that the Museum now possesses one of the three or four leading collections of recent insects of the New World. The total number of specimens or even of named species defies computation, but some idea of its magnitude may be gained from the fact that Mr. Banks, before his retirement in 1945, had definitely recognized and labelled the type specimens of 27,349 named forms of insects alone, as well as of 2,175 named forms of true spiders, while the collection also contains several hundred types of Arachnida other than spiders, and of Myriopods.

Dr. Darlington, since his return from active service in the Army, has not only mounted and labelled something like 6,000 Carabid beetles, but has also rearranged our Oriental Australasian collection of them, as well as completing a card index of the Philippine species, in preparation of a study of the fauna of the Indo-Australian Archipelago.

Miss Phyllis Smith was employed on a part-time basis in the Insect Department, while volunteer assistance by others, as listed on page 7 has been helpful.

Mr. Clench has devoted much care to locating unmarked types in the collection of mollusks, the value of which has been greatly increased by the destruction of many Museums and their collections in Europe. Catalogued entries in the collection of mollusks now number 162,582, representing 28,342 species.

A danger constantly faced in the alcoholic collection of Marine Invertebrates is the drying out of the containers. To combat this, Dr. Deichmann has been assembling the smaller vials to place in large containers. Whenever a tray of these is reasonably well worked over, the jars are being sealed with paraffin to diminish evaporation. The rearrangement of the stony corals has also been begun.

The facts that 79 loans of specimens were made to other institutions and individuals, and that 71 students visited the Museum from elsewhere to study our collections for longer or shorter periods, besides many more who were here briefly or from whom

we received inquiries, bear witness to the value of our collections as source material for investigations in zoölogy, outside of our own staff.

*Collecting Expeditions:* In September Dr. Romer explored new vertebrate localities in the late Paleozoic of north central Texas. In the spring, Dr. White spent a little over two months working the Thomas Farm locality in north central Florida, mentioned repeatedly in Dr. Barbour's earlier reports. The members of the Department of Biology and Geology of the University of Florida aided him in many ways, our thanks being especially due to Dr. J. Speed Rogers, Mr. J. C. Dickinson, Jr., and Mr. Richard Edwards.

During July and August Mr. Clench accompanied Dr. C. G. Aguayo, Professor of Zoölogy in the University of Havana, on an expedition to the Oriente Province of eastern Cuba for the collection of fresh water mollusks, especially in the hope of determining whether the snails responsible for the spread of the blood fluke *Schistosoma mansoni* of Africa, of northern South America, and of certain islands of the West Indies, have been introduced from Puerto Rico and from Hispaniola to Cuba. While they did not locate any specimens of the particular snail that acts as the vector for Schistosomiasis in Puerto Rico, where the disease is fairly common, they did find in almost every Cuban stream investigated another fresh water snail, *Tropicorbis havanensis*, that has been found to carry the disease under laboratory conditions. Mr. Clench also reports that Mr. Ralph Humes of Coconut Grove, Florida, made a trip for us on his yacht *Omar* among the islands along the northern coast of Camaguey Province, Cuba, on which he collected many marine and land shells from islands that has never been investigated for their molluscan fauna.

Finally, in June, Dr. Deichmann and Miss Robinson visited the island of Grand Manan where they collected various marine invertebrates.

*Additions to the Collections:* Mrs. Schevill reports that small series of mammals from Labrador, from Cuba, from the Gold Coast, West Africa, and from Okinawa have been received from various donors, including Dr. Barbour.

Mr. Peters reports a splendid series of birds from Korea from Lt. Comdr. O. L. Austin, Jr., and 97 from Venezuela from Mr. W. H. Phelps. Other series purchased, mostly from Cyprus and Paraguay, or received in exchange, have brought the total number of acquisitions of birds to 788.

The chief acquisitions reported by Mr. Loveridge are 122 reptiles and amphibians from Venezuela and adjacent regions from Dr. H. G. Kugler, 53 specimens, mostly snakes from a zoologically little-known region in Colombia from Dr. Richard E. Schultes, and a strange wedge-headed Amphisbaenid from Tanganyika from Mr. R. de la B. Barker, which has formed the basis of a new species, *Ancylocranium barkeri*. Specimens were also received in exchange from various sources.

New entries in the catalogue of fishes since 1941-42, when the last detailed report was presented, have totalled only 705, but Mr. Schroeder states that these have included some very desirable material in various groups from a long list of donors and from localities as widely distributed as the West Indies, Cuba, Florida, Texas, Colombia and other parts of western South America, California, Korea, and the Solomon Islands.

Dr. White's trip to the dig in Florida, mentioned on page 18, added two genera of mammals to the known fauna of the quarry, a total of six since 1942. Fossil donations, from individual friends of the Museum, as well as from other institutions, include, among other items, series of fossil fishes from the Upper Cretaceous of Brazil, shark's teeth from the Miocene of Chesapeake Bay, mammals, birds, and reptiles from the pebble phosphates of Florida, and casts of various interesting fossil reptiles.

During the year 245 more types of recently described insects were received, mostly of bees, from Professor T. D. A. Cockerell. Other acquisitions to this Department came in by gift, or by exchange from 63 institutions or individual donors; outstanding are an unusually fine collection of moths of the genus *Apantesis*; Professor C. T. Brues' micro-Hymenoptera, including several hundred types and named species as well as a large amount of unworked material; Professor T. D. A. Cockerell's types and

other bees, mostly from Africa; and Mr. Lewis Berner's Florida mayflies which include the types of his recently described species.

Mr. Clench's report especially mentions acquisitions of mollusks totalling 3,619 lots from Cuba, China, the Loò Choo Islands, the Philippines, the Marianna Islands, and Okinawa from various donors; 443 lots also came to us from Musée Heude, purchased by the department through Lt. Abbott during his stay in Shanghai. This series will be of great value in working up the complex malacological fauna of China. The total number of additions reported for the year is 5,874.

Acquisitions of marine invertebrates other than mollusks include Antipathids and Gorgonian corals from Florida; Coelenterates and Holothurians from Texas, and Echinoderms from Puerto Rico as well as from the waters around Vancouver Island.

#### DONORS OF SPECIMENS

The hearty thanks of the Museum for donations of specimens are extended to the following:

*Mammals*: R. C. Clement, Col. C. H. Colwell, F. Werner, Lt. Comdr. O. L. Austin, Jr.

*Birds*: Lt. Comdr. O. L. Austin, Jr., George Nelson, W. H. Phelps, Miss Helen Schiefer, and Lt. D. W. Thompson.

*Reptiles*: Dr. H. G. Kugler, Dr. Richard E. Schultes, R. de la B. Barker, Moreland Carter, Dr. R. P. Dow, Brig. Gen Findlay, R. W. Foster, W. J. Furlong, Dr. Bertha Lutz, J. R. Slater, Capt. F. N. Young, and Arthur Loveridge.

*Fishes*: R. W. Foster, J. W. Lowes, D. Gangi, Arthur Loveridge, W. J. Clench, Louis Rivas, Dr. Elisabeth Deichmann, Dr. Daniel Merriman, Stewart Springer, Dr. Luis Howell Rivero, J. L. Baughman, Dr. Carl L. Hubbs, Capt. L. W. Jarcho, Dr. Cecil Miles, Floyd Werner, Otis Barton, Capt. Richard Howard, and the Marine Biological Laboratory, Woods Hole.

*Fossil Vertebrates*: Dr. Hugh Cutler, George E. March, George C. Elmore, and J. L. Marchand.

*Casts of Fossil Vertebrates*: Dr. C. C. Young, J. T. Gregory, Carnegie Museum, Pittsburgh.

*Insects, Spiders, and their allies:* Rocky Mountain Laboratory, N. Banks, M. Bequaert, L. Berner, R. Bowen, M. W. Boyer, J. C. Bradley, C. T. Brues, S. C. Bruner, J. R. de la Torre Bueno, G. S. Cansdale, F. M. Carpenter, A. M. Chickering, W. J. Clench, T. D. A. Cockerell, R. A. Cooley, R. Cortés, P. J. Darlington, V. Dethier, R. R. Dreisach, F. van Emden, G. B. Fairchild, Mrs. H. E. Frizzell, D. C. Geijskes, R. Ghys, L. R. Gillogly, Mr. and Mrs. C. J. Goodnight, H. Henrot, H. Hoogstraal, G. H. E. Hopkins, C. Jacot-Buillarmod, W. D. Jellison, Miss Sarah Jones, R. Latham, E. T. Learned, M. Leclercq, E. A. Mason, G. A. Mavromoustakis, E. T. Moul, M. H. Muma, G. Nelson, Mrs. Pargellis, H. M. Parker, E. D. Parmer, C. T. Parsons, C. B. Phillip, H. D. Pratt, E. Ray, C. L. Remington, S. Renjifo S., P. Rosado, R. E. Schultes, M. E. Smith, H. de Souza Lopes, D. B. Stallings, H. Takahasi, Gertrude Theiler, F. G. Werner, W. Weyrauch, and L. O. Williams.

*Mollusks:* Ralph Humes, Lt. R. T. Abbott, D. W. Crocker, C. T. Parsons, Alberto Queñones, F. N. Young, Massachusetts Institute of Technology, L. A. Burry, G. B. Fairchild, R. R. Castañeda, G. C. Quelch.

*Marine Invertebrates other than Mollusks:* Ted Bayer, Denlen W. Crocker, J. W. Hedgpeth, W. G. Hewatt, H. G. Kugler, Dr. Hilary B. Moore, Miss Elizabeth Pope, F. E. Ricketts, A. H. Verrill, F. N. Young, L. S. Fred. Ziesenheune.

*Invertebrate Fossils:* S. J. Olsen.

## TEACHING AND OTHER ACADEMIC ACTIVITIES

Members of the Museum Staff gave the following courses under the Faculty of Arts and Sciences:

Dr. Bigelow in collaboration with Professor Cleveland and Professor Welsh, Biology '2b, General Survey of the Invertebrates, which was omitted during the war years but was revived in June for the summer term.

Dr. Carpenter, Biology 27, Biology of Insects.

Dr. Romer, Biology 2a, Comparative Anatomy of the Vertebrates.

Arrangements have also been made for Mr. Stetson to offer a course in Sedimentation during the coming year in the Department of Geology and Geography, while Dr. Carpenter served as Acting Associate Dean of the Graduate School of Arts and Sciences from January through June, and Mr. Griscom on the Board of Freshman Advisors, likewise as an Associate of Kirkland House.

### PUBLIC EXHIBITS

Few alterations have been made in the public exhibits this year. Mr. Nelson's mount of the Pliocene rhinoceros, *Teleoceras*, which was mentioned in Dr. Barbour's last report, was placed on exhibition, as was his restoration of a very badly crushed skull of a Miocene dog, which Dr. Barbour has described as a masterpiece. The exhibit of fossil mammals was also largely rearranged to display them to better advantage; Mr. Nelson has also renovated some of the mounts of recent reptiles, and Dr. Edinger has arranged a new exhibit, based on her own very interesting researches showing the development of the horse brain starting with very primitive ancestral forms.

At the request of the Corporation a temporary exhibit was set up, in June, for the sake of returning alumni. We were able to display a fine series of birds, bats, reptiles, amphibians, fishes, and insects, chiefly from the Pacific area, received by the Museum from our curators and from other friends who were serving with the armed forces. Some of the activities in which members of the staff took part were also shown, though it was not possible to make this exhibit complete as much of the work has been done elsewhere, and some of it is still confidential. Of special interest was one exhibit showing the value of a knowledge of natural history in air-sea rescue work, a second showing the damage that is done by wood-boring mollusks, and another illustrating the part that is played by certain snails in the spread of *Schistosomiasis*.

### BUILDINGS AND EQUIPMENT

The withdrawal of the Navy from the Museum set free the large lecture room on the ground floor and the two Whitney

rooms on the second floor. The first of these has been subdivided into five smaller rooms to accommodate undergraduate and graduate instruction in palaeontology. The Whitney rooms have been turned back to the use of the Library. The addition of book stacks in one of these rooms has allowed Mrs. Frazier to rearrange some classes of books, resulting in a much needed increase of space for expansion among our general serials. The rarer books have also been transferred to glass fronted stacks in the front Whitney room, where they can be kept locked up for safety. Mrs. Frazier estimates that the space now available is sufficient for the expansion in the library reasonably expected for the next ten years or so.

The small room in the basement formerly used for storing glassware has been reconditioned and fitted with storage cases, as well as with electric lighting, for the use of the Department of Reptiles. It now houses the greater part of our collection of turtles. A small dark room has been installed for the use of the curators of Invertebrate Fossils; other improvements include a new mothproof case for the bat collection, one of a series of such that are needed in the Mammal Department; a double storage case of standard type for invertebrate fossils; a new wall case for insects; 200 new glass top insect boxes; also a general renovation of the insect rooms, which are now in excellent condition, thanks to the energy of Dr. Bequaert. Other storage cases are much needed, but costs are now so high that it seems wisest to postpone their construction.

## LIBRARY

Mrs. Frazier reports that during the year the net increase in volumes has been 1,193, and 1,742 in pamphlets. At present the library contains 88,549 catalogued volumes and 114,341 catalogued pamphlets. Dr. Barbour during the years made many gifts to the library. Not until his death did we realize how much he continually turned over to the Museum from his own collection of books, journals, and reprints. The friends and curators of the Museum continue to be most generous. The largest lot of books and reprints received during the year (about 30,000) came



to us from Professor Shimer and Dr. Robert Schrock of the Massachusetts Institute of Technology. These have not yet been entered in our catalogue. The receipt of publications that come to us by exchange from abroad has been accelerated and we are rapidly filling the many gaps in our journals caused by the war. Mr. George R. Agassiz's continued generosity has made possible the binding of 242 volumes and 10 pamphlets, as well as the listing of duplicates, from the sale of which we have realized \$1,416.50. During the year we loaned 3,450 books, 3,728 volumes within the University, 300 volumes to individuals outside of the University, and sent out 104 on inter-library loans.

### PUBLICATIONS

In spite of many difficulties and delays, such as scarcity of paper, three numbers of the Bulletin with 304 pages and 11 plates, and the Directors' Report for 1945-1946 were published during the year. The Museum has also borne the cost for the publication of three papers by members of the staff in the Proceedings of the New England Zoölogical Club, also the cost of one issue of *Psyche*, journal of the Cambridge Entomological Club. Four more numbers of the Bulletin are now actually in press, including Nos. 4 and 5 of Volume 96, Volume 97 complete, and Volume 98, No. 1. Two manuscripts to form two additional Bulletin numbers have been edited and sent to press, and a third has been accepted but has not yet been edited. Other Museum publications during the year through the Harvard University Press have been an offset reprint of Brues' and Melander's *Classifications of Insects*, which appeared as Volume 73 of our Bulletin and has had a continuing sale; also Volume V of Mr. Peters' *Checklist of the Birds of the World*. It is largely due to Mr. George A. Agassiz's continued interest and to the contributions from his own purse that so much has been possible.

The first volume of *Johnsonia*, published by the Department of Mollusks, was completed in November. It contained 18 numbers with a total of 318 pages, while 40 pages have been published in Volume II. The Department also initiated in February

the publication of a new serial "Occasional Papers on Mollusks" to care for short contributions. During the year eight papers appeared in this series, a total of 108 pages. Its publication has been made possible by the generous gifts that Mr. Richard W. Foster has continued to make to the Department.

We have been able to supply requests from various institutions for one complete set of our past publications, also for four partial sets and for about 500 other numbers, either of the Memoirs or of the Bulletin, a total of about 2,750 numbers.

HENRY B. BIGELOW,  
*Acting Director.*

## PUBLICATIONS FOR THE YEAR 1945-1946

(31 July, 1945 — 1 August, 1946)

Museum of Comparative Zoölogy

*Publications:* The following have been printed during the year.

## Vol. 96

No. 1. A Study of the Snake, *Tachymenis Peruviana* Wiegmann and its Allies. By Warren F. Walker, Jr. 55 pp. November, 1945.

No. 2. First Supplement to Typical Reptiles and Amphibians. By T. Barbour and Arthur Loveridge. 158 pp. February, 1946.

No. 3. The Genera of Fossil Conchostraca — an Order of Bivalved Crustacea. By Percy E. Raymond. 91 pp. June, 1946.

*Publications by the Museum Staff*

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